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ON THE LAW OF MORTALITY IN PHTHISIS, AND THE INFLUENCE
OF MORAL CAUSES IN PRODUCING THE DISEASE.

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ANY person who will take the trouble of reading with attention the successive Reports which have been published by the Registrar-General of England since the institution of that office, cannot fail to have two things deeply impressed upon his mind :—the first is, the extreme degree of care employed in the compilation of the tables to which the reports refer, as evidenced by the elaborate corrections introduced for the elimination of errors ; and the second is, the extraordinary fact that each successive year confirms, in an astonishing manner, the results of those that preceded it.

It is scarcely necessary for me to remark the vast importance of these records, both in a national and in a scientific point of view. To the statesman engaged in the study of political economy, they are important, because they bear directly upon all questions connected with population, the source of a nation's greatness, and the evidence of its prosperity. To the philosophical physician they are equally important, throwing a light upon disease which is nowhere else to be obtained. As official documents, bearing upon the interesting subject of statistics, they possess a value which it is impossible that any private researches, however carefully prepared, can ever obtain. In the first place, when a private individual sets about collecting information of this kind, and publishes the result to the world, we have to be satisfied of the motives which induced him to commence the undertaking before we can yield implicit credence to his statements. We naturally suspect that he has had some preconceived theory to support, and that this has, however unconsciously, colored his conclusions. We require further to be acquainted with the opportunities he has enjoyed for collecting the information sought to be communicated, his habits of observation, and, above all, his veracity. All these are matters which it is extremely difficult to render so apparent as to overcome the scepticism that naturally attaches to conclusions drawn from such premises.

With a public officer the case is different ; the nature of his appointment sufficiently accounts for his engaging in the dry details of figures, of which all statistical researches are composed ; and the absence of

any motive to alter the returns affords a strong probability that they are impartially recorded.

But there is another reason, in addition to the foregoing, which stamps peculiar value upon these official documents, and that is, the great extent of country over which they are spread. In all calculations of this kind it is well known that the liability to error diminishes inversely with the magnitude of the numbers treated of; in other words, the larger the field of observation, the greater the accuracy.

Now, it is obvious that it is impossible for a single individual to collect, with all the exertions he may bring to bear upon the subject, a mass of facts capable of the slightest comparison with those which have been accumulated by the Registrar-General, assisted by his numerous staff throughout the country; and it will be shown a little further on, that, making every allowance for the veracity of private collectors, their habits of observation and accuracy, still differences will naturally appear upon the face of their registers, arising from the very circumstance of their labors being confined to limited districts, where local causes exercise peculiar disturbing influences.

I have already said that no sufficient motive, such as previous impressions, can be supposed capable of acting upon a public officer, so as to induce him to alter the returns to suit his peculiar views; in the case before us, however, such a supposition is not only improbable, but it is absolutely impossible. The extent of the machinery employed in the preparation of the tables, is sufficient to prevent its occurrence, because, as the gross returns consist of innumerable entries from detached localities, transmitted through various hands, it is necessary either to suppose that a concert of the most intricate kind is maintained between these subordinates and the Registrar-General himself, to produce the required result, or to admit the strict impartiality with which the whole proceeding is conducted. The difficulty of attempting to give a peculiar complexion to any part of these returns, added to the total absence of all motive for such a proceeding, renders the idea evidently absurd.

And what confirms this still more, is the circumstance to which I have previously alluded, that the returns in successive years continue to give similar results to those which were first published; a fact that strongly proves the accuracy with which they have been drawn up, and the absence of all intentional perversion in the entries. For, unless we suppose the subordinate returns entirely disregarded, and a fraudulent concoction of imaginary figures substituted in their place, it is manifestly inconceivable that a systematic design of altering, in ever so slight a degree, the documents, could be carried on year after year, and yet the entire result continue to tell the same story.

I have dwelt upon this point more than may seem necessary to many readers, because I feel that, in drawing conclusions from these tables, everything depends upon the perfect accuracy and the strict impartiality with which they have been drawn up. That errors have crept into them, notwithstanding all the care taken to prevent their occurrence, can scarcely be questioned; but they are errors arising from the imperfection of human knowledge, and not from any wilful perversion on the part of

those engaged in preparing them; and what is more, these very errors, in the nature of things, tend to neutralize one another; for, if in any one instance, a case of bronchitis has been entered by mistake for consumption, there is an equal probability, the error being unintentional, that a case of consumption has been elsewhere set down for bronchitis.

The Report of the Irish Census Commissioners for 1841, with Mr. Wilde's Analysis of the Mortality Tables, is a public document similar in kind to those of the Registrar-General of England, and of equal, if not greater, importance. The high scientific character of the gentlemen employed on the work is a sufficient guarantee for the learning and ability displayed in its preparation. Having enjoyed the advantage of the previous publication of some of the English reports, to serve as models for their guidance, they have rightly endeavored to equal, in accuracy and in detail, their great statistical rivals. And in some respects, they may be said even to have excelled them. But in two points, on the other hand, it must be confessed that the Irish records labor under a great disadvantage, as contrasted with the English, though the fault in no way rested with the distinguished individual who compiled them.

The first of these was the including a period of ten years in the inquiry, instead of one, as is the case in England, whereby many facts, especially in the earlier years, escaped record altogether; and the second was the absence of all provision for their subsequent repetition. Had these valuable inquiries been pursued annually from that time up to the present, during which the country has been undergoing the most afflictive dispensations of famine and pestilence, what an amount of important information would they have contained! With what confidence might our senators and statesmen have turned to their unquestionable, though unpalatable, truths, and, instead of vague assertions and conflicting opinions, the naked facts would have spoken in the plain but startling language of figures, till the alarmist on the one hand, and the sceptic on the other, had learned to submit in silence to their decision.

Now, it is a curious and instructive fact, that the very same results which appear in the Registrar-General's reports, in reference to the mortality of various diseases, appear also in those drawn up by Mr. Wilde, as I shall presently take occasion to point out; with this exception, that in the latter the proportion of the whole to the population is considerably less than in the former; a fact accounted for by the defective registration as to the earlier years of the decade, by the removal of families during the interval, who alone were capable of giving the information; the voluntary mode in which the statements were furnished, and the facility with which such matters are forgotten a short time subsequent to the event. But as these causes are likely to operate with considerable uniformity, affecting equally the details of each sex, of all ages, and of every disease, it is easy to understand that the general effect of these omissions in the register must be to leave the relative proportion pretty much the same as it would have been had no such omissions taken place.

Now the remarkable circumstance that each of these records, as they have successively appeared, exhibits a striking uniformity in the relative

proportion of deaths produced by each disease, as compared with the population—an uniformity not limited merely to the aggregate numbers, but extending also to each of the sexes, and to the different periods of life—forces upon us the conviction that the fatal event which terminates existence does not occur, as was formerly supposed, in an irregular, uncertain manner, by a sort of accident, but is regulated by a fixed or settled principle, which may be called the “law of mortality,” and which produces this unexpected harmony of results. Of course, in saying that the records of death exhibit a striking uniformity of results, I exclude from the consideration those which are produced by epidemic causes, and which are subject to periodic or peculiar variation. The former may be compared, from their stationary character, to the fixed stars in astronomy, which never appear to change their position to one another or to the spectator; while the latter resemble the planets, or, perhaps more properly, the comets of our system, and which obey a distinct law of their own.

But in using the expression “law of mortality,” though not now introduced for the first time, several objections naturally suggest themselves to the mind. The first is, as to the propriety of the term. It is evidently based upon an assumed analogy between the phenomena of the material universe and of animated nature. Now there is this remarkable difference between them, that, while the facts from which the laws of matter are deduced are universal, those which we observe in living bodies exhibit numerous exceptions. For example—in every country where the ratio of the sexes at birth has been accurately observed, it has been found that the number of male infants exceeds, by a marked and regular amount, that of female infants. But if we limit the inquiry to a single family, we know that this proportion does not hold good.

Similar exceptions occur in all the assumed laws connected with life: is the expression then proper under the circumstances? To this objection a double reply may be given. First, that the exceptions may be apparent only, and not real; just as we know that the planets move constantly in one direction at a uniform rate, and yet to the eye of the observer they appear at times to be stationary, and at times to be moving in a direction opposite to their natural course.

The second answer is founded upon a consideration of the nature of the principle of life, which includes the idea of a separate and independent power in each individual, which enables it to resist the influence of external agencies; for example, the power of maintaining a uniform temperature in opposition to that immediately surrounding it. Now the living principle may exist in various degrees, being stronger in some instances than in others, and consequently the power of resistance may be more effectual in certain individuals than in others. In brute matter, on the contrary, no such power of resistance can be detected, but it lies completely passive under the influence of every impression to which it is exposed. Occasional exceptions, accordingly, are the natural results of the condition of existence in the one class of subjects, and not in the other. The operation of the law is secured on the average by the strength of the controlling force being made greater than the general

amount of resistance to be overcome ; but the vital principle being sometimes unusually energetic, accounts for the occasional exceptions.

A second objection may be taken to the expression "law of mortality," from its appearing to imply the notion of *necessity*. If the divine Creator has really implanted in our nature a property of spontaneous termination by certain diseases, according to fixed general laws, it is not only improper but impossible to counteract His will. If such an idea be correct, the resources of medicine are valueless, and the improvement of the healing art is impracticable. But this mistake arises from proper attention not being paid to what is really implied in the notion "law of mortality," which is neither more nor less than a *tendency* to produce a certain result if uncontrolled ; just as the principle of gravity is only a *tendency* in the particles of matter to approximate with an intensity varying in proportion to their masses, which may or may not take effect according as this tendency is controlled or not. When a man places a book upon a table, he does not imagine that he is profanely interfering with the laws of nature ; and similarly when a physician, by the use of medicine or otherwise, attempts to stop the progress of disease, he is so far from opposing the divine will that he is actually carrying it into effect. That the powers of medicine are not worthless, and that the healing art is really capable of improvements which may have the effect of prolonging life and diminishing sickness, are facts which no candid mind can possibly deny ; but the position that diseases and death are the natural results of certain fixed and general laws does not in the slightest degree interfere with the admission of their truth.

Other objections may be raised to the expression on the grounds that it is inconsistent with the doctrines of the divine foreknowledge and of special providence ; but these, being theological questions rather than medical, are not suitable for discussion on the present occasion ; I shall only add, that I consider them equally capable with the former of a simple and satisfactory explanation.

[To be continued.]

ABSCESS IN THE SUBSTANCE OF THE BRAIN.

[In the 13th number of the present volume of the Journal some account was given by Dr. Reese, of New York, of an important surgical operation by Dr. Detmold, of the same city, in a case of abscess of the brain after fracture of the skull. The last number of the American Journal of Medical Sciences contains a full report, by Dr. Detmold himself, of this remarkable case. That our readers may be more fully informed of the details of the operation, and of the final result, we copy portions of Dr. D.'s report. The following is his account of the first incision into the brain, which, it will be recollected, was performed on the 13th of September, nearly nine weeks after the accident—symptoms of compression being then very urgent.]

I commenced by surrounding the adhering cicatrix with an incision,

so as to leave that at first untouched, and then made several incisions in different directions in search for fractured bone. In the upward direction, where I had on the former occasion removed the piece of bone, I found the skull firm; but the fracture extended inward towards the median line, downward towards the supra-orbital ridge, and outward towards the semicircular ridge; so that the original wound, and the first deficiency of bone, formed the upper and middle point of the entire wound. By carefully carrying on the incisions, as far as I could readily with my finger separate the pericranium from the bone, I successively removed three large pieces of bone, which, including some small splinters, and the two pieces removed before, made an opening into the left half of the os frontis which measured about five square inches. The opening extended to within half an inch of the supra-orbital margin; and the outer piece had formed part of the linea semicircularis. All the pieces showed strong marks of absorption, the edges being rounded off, and the surface uneven and porous. Professor Dickson expressed his fear that the supra-orbital margin might be fractured, and the injury extend to the base of the skull—a fear which the final result proved to be but too well founded. But, as all the edges which surrounded this now large defect of bone were apparently firm and immovable, and as the pericranium everywhere strongly adhered to the bone, I concluded that I had removed all the fragments, although the condition of the patient was not in the slightest degree improved. By the lateral incision I had divided the temporal artery, and allowed it to bleed freely, but it made no impression on the patient. It was remarkable, and I looked upon the fact as a favorable sign, that, notwithstanding his profound stupor and general insensibility, the patient exhibited unmistakable signs of intense pain at every incision through the integuments. After having cleared the wound of blood, the dura mater appeared, throughout the whole extent of the wound, in a natural condition, with the exception of the adhering cicatrix, which had been left as a small island in the upper part of the wound. Finding that the removal of the fragments of bone had not changed the condition of the patient, and also finding all the bony limits of the defect firm and without any depression, I proceeded to dissect off the adhering cicatrix, removing with it the dura mater to the same extent, as the cicatrix was adhering to it, and brought the brain itself into view, covered with the pia mater, which appeared thickened. I then introduced a probe under the dura mater, and passed it around the whole opening between the dura and pia mater, to ascertain whether anything morbid could be found there; but the probe passed freely round, being plainly visible through the transparent membrane. I now felt again, with great anxiety, for the fluctuation which I thought I had detected before commencing the operation; but the removal of such a large portion of bone, and the opening of the dura mater itself, had taken away all tension, and I did not discover any fluctuation. Confident, however, that an abscess in some part of the brain was the cause of the present condition of the patient, and equally certain that, unless speedy relief was given, he must inevitably sink within a few hours, I determined to make an incision into the brain; and, in the hope that my first impres-

sion about the fluctuation had been correct, and that, as I stated above, the removal of the tension had rendered the fluctuation indistinct again, I chose this place, where the brain was now already denuded of dura mater, and made an incision into the substance of the brain, about one inch in length and about half an inch in depth, which was followed instantaneously by a thick stream of healthy-looking pus; further discharge was then favored by gentle pressure on the dura mater, and by proper position of the head. I regret that, at the time, no means were taken to ascertain the exact quantity of the matter discharged; but the circumstances, and the uncertainty of finding the matter, will easily account for that omission. The quantity was afterwards variously estimated by the different medical gentlemen present; several estimated it as high as five ounces, while the lowest estimate exceeded two ounces. The effect of the discharge was almost magical; for the patient immediately opened his eyes, put out his tongue when requested, and answered distinctly that he felt better; the pulse rose immediately to above 60 per minute. The wound was covered with warm water dressing, and the head placed as much as possible in a position to facilitate the discharge. Absolute rest and water-gruel were recommended.

The patient passed a quiet night, enjoying sound sleep, and awoke, comfortable and refreshed, next morning. The wound continued to discharge freely, and, in a few days, all the incisions healed, leaving merely an opening to the extent to which the original scar, with the corresponding portion of the dura mater, had been removed. A probe introduced into the opening passed into a cavity of about three inches in diameter, extending nearly towards the median line. On account of a tendency of the opening to close, and cause the cavity to fill again with matter, a small tent of lint was introduced, and the warm-water dressings continued. The patient was in every respect doing well; sat up in bed at every dressing of the wound; conversed freely; was cheerful; and had a good appetite. Therefore, no farther interference, with the exception of a simple enema every third day, was deemed necessary; and taking into consideration the length of time which had elapsed since the accident, the comparatively slight suffering of the patient while carrying about this collection of matter, the immediate and complete relief which the opening and discharge of the abscess had given him—together with the fact that the anterior lobe of the brain was the seat of the injury—I was sanguine in my prognosis, in spite of my friend Professor Dickson, who took a different view of the case.

[Hernia cerebri protruded from the opening, and had reached the size of a walnut on the twelfth day; but pressure was successfully applied. The patient left his bed on the eighteenth day. In about three weeks he was out of bed the greater part of the time, but began to lose his memory, and in a few days he could recollect neither his own name nor the names of his wife or children. Oct. 18th he complained of headache, had an attack something like a convulsive tremor, was unwilling to leave his bed, and the place where the bone was removed became more prominent. Oct. 22d, the patient was in a condition approaching to stupor, and as the probe could not be passed as deeply as formerly,

it was supposed a new accumulation of matter had taken place. Another incision through the integuments into the brain was accordingly made, to the depth of $1\frac{1}{4}$ inch, but no pus was found. Yet the patient was much better next day, and his memory improved. A probe could be passed $4\frac{1}{2}$ inches into the brain, taking the direction of the lateral sinus. His memory was soon lost again, and on the 27th of October he was speechless, but could nod his head when asked a question. On the 28th he was worse; and thinking the unfavorable symptoms were due to an accumulation of matter in the lateral sinus, Dr. D. determined to make an incision into it. The patient was also then laboring under what was feared to be an effusion into the peritoneal cavity. The following is Dr. D.'s account of the last operation upon his patient, and of a subsequent *post-mortem* examination of the head.]

About 12 o'clock, on the 28th of October, about sixteen weeks after the accident, and about seven weeks after I opened the first abscess, in presence of Drs. Dickson, Miller, Ayres, Michaelis, Palmedo, and others, I made an incision through the most prominent part of the integuments, penetrating fully an inch and a half into the substance of the brain, which appeared unchanged; but no pus followed the incision, although I thought, on withdrawing the knife, that its point was stained with pus. I then introduced a probe, which passed readily into the lateral sinus four and three quarter inches deep; but, not finding any pus, I abandoned further interference. The patient having passed no urine in twenty-four hours, I introduced a catheter, but found the bladder empty. I now considered that I had gone as far as I could possibly justify; and we left the patient to his fate. We had been gone scarcely five minutes, when matter began to flow freely from the wound; and the nurse caught about $\frac{3}{4}$ ss. of it in a glass. I went to see the patient again about 7 o'clock in the evening of the same day, and, just at the moment I entered the room, he calmly, and without a struggle, breathed his last. I was, of course, anxious to make an examination, but gained, with the greatest difficulty, the permission from the friends to examine merely the head on the same evening. I called upon Prof. Dickson, Prof. Pattison, Dr. Bowen and Dr. Miller; and, at my request, Prof. Pattison himself had the kindness to make the *post-mortem*, two hours after death.

After removing the upper part of the skull, all the edges of the fractured bone were found rounded off by absorption, the dura mater in a congested state, the substance of the brain exhibiting on a cut surface rather more and larger red spots than normal; and, upon cutting down to the ventricles, both lateral ventricles were filled with a thin pus, the right ventricle containing a larger quantity than the left, which had partly discharged its contents before death through the wound. In the roof of the anterior corner of the left ventricle, a fresh incised wound was found, showing that I had, in the morning, carried my incision, as intended, into the ventricle. The uniting of the cut surfaces of the substance of the brain, immediately after the passage of the knife through it, had prevented the matter from being directly discharged. The septum pellucidum was broken down by suppuration. There was a deposit of lymph inter-

mixed with pus upon the choroid plexus, and the same deposit could be traced through the third and fourth ventricle, making its appearance at the base. The supra-orbital ridge was broken, and the whole left orbital plate of the frontal bone was broken into small fragments. The abdomen was not opened.

SICKNESS AND DEATH OF THE LATE DR. S. B. WOODWARD.

[THE following notice of a distinguished member of the medical profession, whose death was mentioned in the last Journal, is from the pen of his surviving partner, Dr. Samuel A. Fisk, of Northampton. Though written for a newspaper—the Hampshire Gazette, from which we copy it—it embraces facts which will be interesting to Dr. Woodward's professional brethren. It is hoped that a complete sketch of his life and character will soon be prepared and published.]

Dr. Woodward, though a man pronounced by artists as without a superior in the country for physical development, and though of a robust constitution, regarded himself as quite susceptible of disease, but possessing a system of a strong conservative power which enabled him to throw off rapidly any malady he contracted. So that, although he has been many times severely ill, yet his sicknesses, until the last, have invariably been of a short duration.

With other affections in the early part of his manhood, he suffered with an inguinal hernia of the left side, which, after fifteen years' standing, was radically cured by his wearing a truss. He was also afflicted, for the same length of time, with varicose veins of the right limb, which, with the usually accompanying ulcers, also healed. These facts are mentioned on account of the influence they had upon the minds of the numerous medical gentlemen, he had consulted from time to time, in their investigations for the cause or causes of his maladies.

Since the disappearance of these complaints, sometimes oftener, at other times less frequently, he has been subject to most severe and distressing attacks of bilious colic, at which times the pain was invariably seated in the part formerly affected with the hernia; which fact, together with the peculiar sensations he experienced in that portion of the bowels, led him and his medical advisers to apprehend that adhesions had taken place, when the former difficulty was relieved, which at times produced a partial or entire stricture.

For these severe illnesses, thirty of which he had at Worcester, he had counsel of the most eminent physicians of this State, of Connecticut and of New York.

Being in Washington at a meeting of the superintendents of the various insane asylums of our country, he had one of the severest of his attacks, and was attended by his able brethren, by the accomplished medical gentlemen of that city, and by those of the medical staffs of the navy and army.

By these and by all his physicians he had been frequently and thoroughly examined, and as no organic disease was discovered, the natural

conclusion was, that his illness was the result of functional derangement. During the past summer, he was violently seized with illness after exerting himself at hay-making a part of a day, from which sickness he never fully recovered.

About the first of November he was again attacked with a most violent pain in the inguinal region, as before, which lasted for ten or twelve hours, and which was followed by great prostration of the system. After a day or two, however, he began to be convalescent, and was able during the pleasant weather of that month to ride out two or three times, giving him and his friends good reason to hope for a speedy return of health. But afterwards, about the first of December, he had a relapse, even more severe than that of the preceding month.

From this time he failed gradually in strength—his old symptoms assumed different characters, and new ones manifested themselves. At times he suffered from neuralgic pains in the seat of his former difficulties, but frequently in other parts of his bowels, until the last two weeks of his life, when they wandered from place to place. At this time his brother, Dr. Charles Woodward, of Middletown, Ct., who visited him as opportunity permitted, together with his medical attendants in town, made repeated examinations, without finding any organic disease.

His heart, which in health was regular in its action, was now hurried, and at times irregular, which he stated was always the case from his childhood when he was ill; and as no lesion was discovered upon the most careful stethoscopic examination, that difficulty was regarded as functional.

Being able to take but little food, he failed quite rapidly, and passed last Wednesday night in most excruciating neuralgic pains of the whole body. Thursday morning he was exceedingly prostrated, and became more and more feeble as the day advanced, until about 6 o'clock on Thursday evening, immediately after taking some wine and water, he was seized with a violent spasm, and died instantly without a struggle.

In presence of Drs. Sargent of Worcester and Hall of this town, a *post-mortem* examination was made on Friday evening. Upon laying open the thorax, great was the surprise at finding the right pleural cavity filled with coagulated blood. Into that side of the chest all the blood of his body had been emptied.

The heart was found to be in a perfectly healthy condition—the integrity of the lungs not at all impaired, but in as sound and perfect a state as ever. The spleen was somewhat enlarged, but otherwise healthy. The pancreas natural, and the liver in a normal condition. In the gall-bladder were found six calculous concretions, varying in size from that of a pullet's egg to that of a small pea. The stomach and bowels also were found in a perfectly healthy condition, and the portion in which he had experienced so much pain and suffering was unimpaired and entirely free from disease. The only remaining lesion was in the left kidney, the body of which was *indurated*. Whether it was a scirrhus disease, which it closely resembled, or whether a simple induration, further investigation with the microscope will determine. Of pain and disturbance of this organ he never complained.

After a lengthy and close search for the rupture which produced the fatal hemorrhage, there was discovered the remains of a very small aneurismal sac upon the aorta, immediately where it passes through the diaphragm, and a rupture of this sac was the immediate cause of his death. As is apparent, the biliary concretions were the source of his sickness and sufferings, obstructing the flow of bile as they did, and producing great irritation by their presence in the gall-bladder.

During the latter part of Dr. Woodward's illness, the pain and spasmodic actions were not confined to his bowels, but extended themselves to the muscles generally—in which the diaphragm seemed especially involved—and it is without doubt, that in one of its contractions, the injury was produced that ended his life.

MEDICAL HISTORY OF A CALIFORNIA EXPEDITION.

To the Editor of the Boston Medical and Surgical Journal.

SIR,—Perhaps the medical history of a California expedition from the States to this point, would not be wholly devoid of interest to your readers. The Ithaca and California Mining Company, of which I acted as physician, left Ithaca, N. Y., in March last. It consisted of fifty members, besides a number of outsiders. We left Independence, Mo., where we had been encamped about three weeks, on the 13th of May, with pack mules. Cholera was rife on the Missouri river when we ascended it, and there were a great many fatal cases of it at Independence, both among the California emigrants and the inhabitants. We came to Bent's Fort, thence to Pueblo, which is between 38 and 39 degrees of latitude, and on the Arkansas river. Thence across the mountains to Utah Lake. We did not come in contact with the South Pass route at all. The weather was very hot when we were on the Arkansas; the company threw away their tents and bivouacked. Our food consisted mostly of flour, which we baked ourselves, salt pork, and game, such as buffalo, deer, bear and antelope; also a large amount of pinola, which is Indian corn parched, pulverized, and mixed with sugar. This is a convenient article for emigrants to use, as it is only put into water for that purpose. But I think it had a tendency to produce diarrhœa among us, particularly while we were in a cholera atmosphere. Before leaving Independence, and on the route to Pueblo, we had many bad cases of diarrhœa. These were treated with morphine, and the patients directed to use a tablespoonful of rice only three times a day. Coffee was permitted, but without sugar. In protracted cases, mercury was used. The doses of morphine required to control the discharges, were large when we were travelling.

We had two cases of cholera. These were attended with the usual symptoms—spasms, rice-water discharges, &c. The treatment was large doses of opium to subdue the urgent symptoms, and afterwards smaller doses of cal. and opium to produce bilious discharges. Sinapisms were applied over the region of the stomach. We were delayed a few days on account of the cholera cases, as they were unable to travel.

There were several with rheumatic affections among us, and one was of a highly acute character. This subsided rapidly under venesection, cathartics, and large doses of opium, a grain every hour or two for 48 hours. Afterwards it was continued in smaller doses until convalescence.

There were two cases of typhoid fever, one of which commenced early on the Arkansas; this was treated with venesection, and cold bathing in the river when the heat was excessive. It terminated in twenty-one days. The second occurred after we left Pueblo, as we came into the mountains. The patients were carried in litters, which conveyed them very comfortably, but the second one, on account of the ruggedness of the mountains and narrowness of the Indian trail, was obliged to mount an animal occasionally for a short distance, and exert himself too much. This case was protracted, attended with a dry skin and restless nights. These symptoms have been relieved, and he has recovered while under the use of the bath from the warm sulphur spring in this place. The temperature of this spring is 104° Fahrenheit. It is at the Mormon city, and I should not be surprised if it should become a fashionable watering place.

On the Arkansas, many of us were poisoned with a species of rhus. This was quite troublesome when occurring on the legs, on account of their depending position in riding. It resembles erysipelas, and was treated locally with stimulating applications. In some instances febrile symptoms followed, for a few days, the subsiding of the eruption.

In the mountains there were several attacks of fever of an ephemeral character. I am told that people passing through the mountains are subject to "mountain fever," but it is not apt to be fatal. There has been no serious attack of disease among us since the 1st of July, when we left the Arkansas. There has been no fatal case of disease among us. Our company are all in health, with one exception, and this is a chronic affection of years' standing.

This place is very healthy. There are three regular physicians located here, but they are all absent at present: two on public business for the Mormons—one in Europe and the other at Washington; the third, Dr. Richardson, who attended lectures in Boston, is at the gold mines. There are 15,000 or 20,000 inhabitants in this valley, and the population is rapidly increasing. I should think that this place would, in a short time, support a number more of physicians. How they would succeed unless of the Mormon faith, I cannot tell. This sect hold to prayer, faith, and laying on of hands, as remedies in sickness, but in reality they often make use of medicine. No one need be afraid to come among them. They are bone of our bone, and flesh of our flesh. They came here to enjoy liberty of conscience. Judging from their works, I believe they act according to the dictates of their own consciences as much as other religious denominations, and so they are as good as others. Some of their members from the South are introducing slavery here, although at present in its mildest form.

No serious accident occurred during our journey, to any of the company. A German, belonging to another company, which overtook us in the mountains, accidentally, with his own rifle, fractured both bones of

his fore-arm. It was decided, on a consultation with the other physicians in our company, to wit, Drs. Jennings, White and Morse, that it was best to amputate immediately. This was performed by us; and although we were obliged to use a bowie knife and hand saw, our only surgical instruments being contained in a pocket case, yet the patient did well. I think that frequent bathing on this journey is an important hygienic measure. There is no other way of keeping the skin clean, as it is difficult for men to wash their clothes properly. As travellers stop by a stream in order to obtain wood and grass, as well as water, it can be practised conveniently. A great evil in the States is in taking too little exercise in the open air. This, with high living, as men approach the middle period of life, produces obesity in them, as it does in the lower animals. This state strengthens the previous indolent habits, and then ennui and hypochondriasis often follow. All these evils, a journey across the continent is admirably calculated to prevent and cure. The lean of our company gained in weight; while those who were corpulent, lost. The gain has undoubtedly been of muscle; the loss, of fat, but only as the strength was increased. The members of the company were in good spirits when free from disease. Many of them sang as they wended their way over the mountains. Here we return to the simplicity of nature—lay down weary at night, and enjoy sweet repose on the green carpet which nature has provided, with no ceiling over us save the embroidered canopy of heaven. We eat with our fingers, and drink with the cup with which nature has furnished us—the hand. No man is here so feminine as to remove the hair from his face, which was grown there for some wise purpose. The exercise taken is of the right kind. We walked much of the distance; but whenever fatigued, or the day became hot, we mounted our mules. After becoming a little accustomed to this way of life, a person is better enabled to withstand the common causes of disease than formerly. While I was attending, on the prairies, a case of cholera, in the night, a tremendous storm of wind, rain and hail came on. As the ground was low, we were immediately flooded knee deep. Fortunately the patient was on an India-rubber bed, which floated. The tent pole gave way, and three of us had our hands on it immediately. If there had been one less, the tent would have gone. We supported it a great part of the night, standing in water over our boots, yet none took cold from it. I have several times been wet to the skin, and lain down at night in wet clothes, being obliged to arise in order to get nearer the fire, and yet got no cold, although I was subject to catarrh while at home from very slight exposure. In crossing the snow-capped mountains between Pueblo and this place, in the middle of July, the weather was quite warm at noon, whereas in the morning we found ice in our camp-kettles three-fourths of an inch thick; yet none had catarrh, or other serious indisposition. Whether the adventurers to California obtain gold or not, those who go the overland route, if they have sufficient stamina of constitution to endure the hardening, will lay up for themselves a stock of health and spirits, which are of more value than the accumulation of wealth.

I. S. BRIGGS, M.D., of Dryden, N.Y.

Valley of the Great Salt Lake, California, Sept. 1, 1849.

LATERAL CURVATURES—NEW INSTRUMENT.

[A CORRESPONDENT addresses us as follows, in regard to Dr. Brown's Orthopedic Infirmary, in this city.]

I have recently visited the Orthopedic Institution in this city, and am happy to find it continues to increase in the number of its inmates and the extension of its means for the treatment of deformities. A new apparatus has been introduced for the treatment of lateral curvatures of the spine, which, after a satisfactory trial, has proved to be more effectual in correcting this common species of deformity among females, than even Guérin's celebrated sigmoid extension couch, which has heretofore been used at this institution, and at the same time its application is much more agreeable.

Patients are not confined to a horizontal position, as they necessarily are in the use of the couch or inclined planes. They sit up, walk about, read, write or work, at their pleasure. I consider this decidedly an improvement in orthopedy. The operation of this new agent is physiological as well as philosophical. Old principles are applied in a new way. The muscles intended by nature for the support of the spinal column, are strengthened by its use, and made to act in such a manner, as to correct any deviations from a normal state that may exist in the relative position of the vertebræ.

In the gymnasium attached to this institution, I also noticed some new apparatus, for developing the chest and exercising and strengthening the muscles of the back. These exercises all have a meaning and tend to an object. One or the other is used, as the circumstances of the case may require, and according to the part which it is intended to affect.

I understand that Dr. Riofrey, a distinguished French surgeon, who formerly practised orthopedy in Paris, on a recent visit to this institution, pronounced its mechanical appliances more complete and better adapted than any he had before seen. He was particularly pleased with the apparatus to which I have above referred, and said that he considered it the most efficient agent, for the cure of lateral curvatures, he had ever met with.

K. K.

SEPARATION OF THE BONES OF THE PELVIS SUBSEQUENT TO LABOR.

[Communicated for the Boston Medical and Surgical Journal.]

LITTLE has been written, and less known, either pathologically or therapeutically, of this deplorable and mysterious disease. In fact, its occurrence is so rare, that not one in fifty of the medical faculty have ever had the misfortune to meet with it. Thus of necessity it has had but a limited and very imperfect investigation. True it is, that many ancient as well as modern writers have briefly noticed it; but even the greatest of them seem to be aware that they are threading a dark, undefined path, and are willing to cut short their remarks, make a virtue of necessity, and tacitly acknowledge the wisdom of knowing "how lit-

tle can be known." As no attempt "to be wise above what is written," will be made, I shall confine my remarks to a brief statement of the facts, as they were and are, in this interesting case.

Mrs. A——, of Cambridgeport, at the age of 17, was confined with her first child, Aug. 26th, 1847. Our worthy and astute friend Dr. A. attended her, as physician and accoucheur. Her labor was natural, but protracted and severe. She however soon recovered from the ordinary effects of parturition, but complained of general weakness, and more especially of lameness and weakness of her "back and hips," from which she had not fully recovered when she commenced her second term of gestation, in the fall of 1848. During this entire term, her health was good, and although she complained of general weakness, the local affection of the hips disappeared, or was so trifling as scarcely to be noticed. On the 26th of July, 1849, she gave birth to her second child. I attended, as her accoucheur. Her labor was natural, of comparatively short duration, requiring little if any assistance. The child was large, fat, and healthy, and the mother recovered in a short time from all the *usual sequelæ* of child-bed sickness. Some two or three weeks after her confinement, she complained of a pain, attended with a "strange dragging or pulling" sensation in her back, and on standing or sitting, two large "bunches" appeared, one on either side of the dorsal column. This led to an examination, and a recognition of this sad but highly interesting disease. The bones of the pelvis were loosened from their connections at every point. There was little soreness and no tumefaction, when recumbent, except what seemed to be a deposition, or infiltration into the cellular texture, in the immediate vicinity of the symphysis pubis, forming an irregular fluctuating intumescence, of the capacity of some two or three ounces. Her evacuations were attended with some difficulty, in consequence of the derangement of locality in the parts concerned. She immediately became faint when she assumed an erect position, and the weakness, "dragging," &c., in her back was intolerable. While standing, the pelvic bones were strikingly distorted. The inferior portion was thrown forward and upward, and the superior portions were pushed dorsal, forming tumors on either side, projecting, at least, two inches backward, and upward so far as to be in near approximation to the false ribs, exhibiting an unseemly and deplorable deformity of the entire pelvis and hips. When she was recumbent, these parts assumed nearly their normal position.

These troubles increased slowly for five or six weeks; after which, up to the present time, January 1, 1850, the apparent improvement, if any, arises, undoubtedly, from the soft parts accommodating themselves to the derangement. At this period she often mentions a "rubbing, pulling" sensation in her back, whenever she turns or rises up partially, and it is too obvious that the connecting cartilages have been entirely absorbed.

On the 22d September, 1849, the justly-celebrated and highly-esteemed Dr. Channing, of Boston, was consulted, whose investigations led him, so far as was expressed by him, to deductions corresponding with the above.

More than five months have elapsed since her confinement, and she

is still unable to stand unassisted. It is obvious, when sitting, that the weight of her body is supported upon the coccygis. The tuber ischii, with the entire pelvis, are pressed upward, bringing the extreme portion of the sacrum in contact with the cushion upon which she rests, causing pain and soreness in the part. It is remarkable that, from first to last, her general health has been good. She enjoys her food much, sleeps well; nutrition is perfect, lactation abundant for a large, healthy child of five months; herself more fleshy than ever, and as she lies recumbent, her aspect is that of one in the full enjoyment of health. Her sanguine habit displays a juvenile freshness, which might innocently be mistaken for the girl of 16, rather than the matron of 19; and though last, not the least, she possesses a degree of modest conviviality, indicative of a mind at ease, in the consciousness of its own purity, and at peace with all.

It will be seen that all opinions with regard to the nature of the disease, or appliances, have been avoided, believing that the case is of sufficient interest to elicit remarks from more experienced pens.

Cambridgeport, Jan. 3, 1850.

J. P. ALDEN, M.D.

THE BOSTON MEDICAL AND SURGICAL JOURNAL.

BOSTON, JANUARY 16, 1850.

Incidents of Surgery.—In the practice of medicine and surgery, cases are perpetually occurring that excite, alternately, surprise, laughter and sympathy. They are not always of a kind to require much thought for their relief, but great tact is often necessary. A degree of mechanical ingenuity is sometimes instantly demanded to prevent painful results, in matters really, at the time, trivial in themselves. To be always ready, therefore, for emergencies, by being able to suggest or adopt the proper remedy at the moment advice is sought, constitutes an essential element in the success of a surgeon. We were led to this train of reflection, the other day, by hearing the following circumstance related.

Dr. Townsend, of the Massachusetts General Hospital, was called to see a boy, who, from some unexplained freak, had put a tailor's thimble on an important organ of his body, and urged it along snug up to the pubes. Swelling and inflammation speedily ensued, which nearly, if not quite, concealed the thimble, it being deeply buried in the swollen mass. When the boundaries of its edges were finally ascertained, cutting pliers were brought to bear upon it; but, being hardened steel, not the least impression was made, and that metal-cutting instrument was necessarily abandoned. Dr. T. then resorted to a three-sided file, and by perseverance ultimately cut through the wall of the thimble, and was thus enabled to pry it open and relieve the patient, before a lasting injury to the part had taken place.

Some years since, we were consulted by a man, an English stocking-weaver, who had a complete obliteration of the urethral canal as far back as the anterior boundary of the scrotum. All the secretions were voided

at that point. This condition was brought about in early boyhood, as follows. Thoughtlessly, while sitting in school, he tied a small thread around the penis. Very soon after, a puffy swelling wholly imbedded the ligature in the integument. Although suffering severely, he had not the courage to confess to the instructress the cause of his uneasiness; and growing rapidly worse, he was carried home. The family, in their alarm, sought the best professional advice at command; but, singular as it may appear, the actual cause of the difficulty wholly escaped observation till the fourth day, when the urine burst through an ulcerated opening back of the ligature, which brought that region at once under inspection. Fortunately, the ligature was detected and cut, before sphacelation took place, but not before the natural outlet was perfectly closed by adhesive inflammation. An operation for restoring the functions of the urethra was deferred from time to time, on account of his youth, with an expectation of resorting to it for permanent relief when he was older, and should understand its true value. Years rolled on, and as he was in comfortable health, and had become accustomed to the new arrangement, no further advice was sought till he had reached the age of 36. After listening attentively to a description of the process for another opening, before the present one could be closed, and shuddering at the idea of the suffering that might attend the undertaking, he confessed that it seemed too formidable, and he should consider the proposition a while longer. The artificial orifice was ragged, always excoriated, and required very special attention in order to be tolerably comfortable.

Ear-trumpets.—All the contrivances for ear-trumpets, in general use, are as unphilosophical and inconvenient as possible. Only two persons, to our knowledge, have thought of copying nature, and hence the poor success of all past efforts in this branch of business. Dr. Smilie, of Tremont street, Boston, actually takes a cast of the defective ear, and inserts a metallic lining to the external surface, which gives a degree of assistance that is most gratifying. A mechanic in France has also succeeded in constructing an instrument that is worthy of consideration. No two cases appear to be precisely alike, and hence the necessity for taking a cast—a point on which the hope of alleviation to the deaf person is based. Instead of using silver or compositions of any of the vegetable gums, it strikes us that the more compact the texture of the metallic fac-simile of the depressions, concha, &c., the more perfect would be the impression. Bell-metal, therefore, or the gong-metal, which is far superior in elasticity and sonorous properties, would be preferable to gold or silver. This improvement is suggested from a consideration of the office of the external cartilaginous ear. If the internal tubes and membranes are extensively diseased, or the acoustic nerve palsied, or the secretions of the semicircular canals destroyed or essentially vitiated, no great assistance can rationally be expected from artificial apparatus. Dr. Smilie's plan is very ingenious, and worthy of notice and encouragement.

Medical Missionary Service.—For years past Dr. O. R. Bachele, resident missionary at Balasore, India, has been a correspondent of this Journal. His letters have been received and published with great pleasure, as they have comprised useful information respecting his practice of medi-

respecting his practice of medicine and surgery, and have also exhibited a strong desire to make known the great value of medical science among the rude, ignorant people, which it is the hope of the friends of missions to convert to the pure and elevating principles of christianity. Dr. Bachelor is under the patronage of the American Free Will Baptist Mission. He has made a report to the Mission Board of his professional labors, for 1848, from which we copy the following items :—

“ Whole number of cases treated during the year, 2407 : medical cases, 1409 ; surgical cases, 995 : surgical operations, 126 ; operations under the influence of chloroform, 12.

“ Of the medical cases there were—Fever, 215 ; rheumatism, 110 ; cholera, 195 ; syphilis, 39 ; gonorrhœa, 35 ; indigestion, 169 ; dysentery, 45 ; diarrhœa, 47 ; cough, 145 ; asthma, 23 ; spleen, 10 ; leprosy, 6 ; consumption, 2 ; miscellaneous, 368.

“ Of the surgical cases there were—Ophthalmia, 99 ; cataract (3 operations), 48 ; opacity of the cornea, 31 ; abscess, 25 ; pterygium, 23 ; tumors excised, 10 ; entropium, 6 ; hernia, 6 ; amputations, 3 ; phymosis, 8 ; stone in the penis, 4 ; dislocations, 2 ; fractures, 2 ; ligatures on arteries, 10 ; ulcers, 210 ; miscellaneous, 491.”

College of Physicians and Surgeons, Upper Mississippi.—Since we visited the village of Davenport, five years since, located on the banks of the Upper Mississippi, a great town has grown up. There was then both activity and thrift indicated in its elementary streets, which have now become as compact and as mercantile in their appearance as the most ardent speculators in corner lots could desire. But an unanticipated feature in that once quiet place, is the organization of a college of physicians and surgeons, with all the accompaniments of an institution for the education of medical practitioners. The college received students for the first time only two years ago. Now, from the introductory discourse of the professor of surgery, John S. Sanford, M.D., there are many gratifying indications of permanency and usefulness, notwithstanding the springing up of new schools, like valley flowers, both above and below their new edifice, on the alluvium of the father of waters.

Dr. Sanford's introductory lecture shows him to be a man of mind, and ambition too—and hence, with his energetic associates, a faculty embracing seven gentlemen of acknowledged ability, their college appears destined to exercise a commanding influence in that far-off section of the Union.

The late Professor J. P. Harrison.—At a semi-annual meeting of the Rhode Island Medical Society, held in Providence, Dec. 19th, 1849, the following resolutions, offered by Dr. U. Parsons, were passed, in token of respect to the memory of the late Dr. J. P. Harrison, of Cincinnati, Ohio.

Resolved,—That the members of the Rhode Island Medical Society unite with their brethren in other States, in expressing their regret at the decease of Prof. John P. Harrison, 1st Vice President of the American Medical Association.

Resolved,—That we cherish a high respect for the character and professional career of the deceased, and a sense of gratitude for his valuable contributions to medical science.

Resolved,—That we tender our sympathy to the family and friends of the deceased, and to the professors that were associated with him in the Medical College of Cincinnati.

Resolved.—That copies of the foregoing be forwarded by the Secretary to the family of the deceased, and the Medical College of Cincinnati, and to the Editor of the Boston Medical and Surgical Journal.

Singular Freak of Nature.—To THE EDITOR, &c.—Dr. Neilson, of this city, has in his possession an egg, which is shaped like a crooked-neck or winter squash, to which it bears a very striking resemblance. The body is about the size of a robin's egg; the neck, or appendage, about two inches in length, and, where it joins the body, half an inch in diameter, tapering to the end, and curved round so that the point rests against the body. The whole is covered with a shell—similar in appearance and hardness to that of a common egg—which, however, is not continuous over the whole surface, but is connected by a suture with that portion covering the neck. The shell that covers the neck is subdivided into four parts, by membranous septa passing transversely around it. The above was found in a common hen's egg, which it nearly filled, being surrounded by and floating in the contents of the outer egg. c. d.

Medical Miscellany.—The cholera has made fearful ravages in Siam. In the course of two or three weeks, in Sept. last, it is supposed that not less than 30,000 died of this disease within a radius of twenty-five or thirty miles. From the 1st of July to Oct. 1, Dr. Shelton, a missionary physician at Madura, had between six and seven hundred patients.—An English surgeon, who found his way to California, writes home that he had received *thirty ounces of gold*, or about \$500, for amputating a limb.—Since March 1, 1848, there have forty-six persons died in the town of Litchfield, who were over seventy years of age. The oldest was ninety-four.—A meeting of the censors of the Mass. Medical Society, 1st district, will be held in Boston, January 30th.—Dr. Samuel Cabot has prepared a report on baths and wash-houses.—A Dr. Delony has been imprisoned in Alabama, for shooting a clergyman.—Whole number of deaths in Greenfield, Ms., in 1849, 44; in Deerfield, 61.—Brandreth, the pill-maker, is a senator in the New York legislature, and a member of a committee on medical societies and colleges!

TO CORRESPONDENTS.—The following papers have been received:—Dr. Carpenter's Address before the Bristol District Medical Society; Dr. Bowditch's cases of Malignant Tumor; Sketches of Physicians, No. XV.; Notice of a second trial for Malpractice in Vermont; and Dr. Stanley's account of a post-mortem examination.

MARRIED.—Dr. David T. Brown, of New York, to Miss C. W. Clapp.

DIED.—In Boston, Edward H. Robbins, M.D., 58. Also, Martin Gay, M.D., an amiable, excellent man, whose loss is greatly deplored by all who had the happiness of his acquaintance. Dr. Gay was well known as a lecturer on chemistry. He was one of the medical gentlemen to whom was referred the supposed mangled remains of the late Dr. Parkman, with a view to their identification.—At Norfolk, Conn., Dr. Benjamin Welch, 82.—At Farmington, Conn., Dr. Thos. Dawes Blake, a native of Boston, 82.—At Melrose, Mass., Dr. Levi Gould, 49.

Deaths in Boston—for the week ending Saturday noon, January 12, 80.—Males, 39—females, 41. Abscess of the lung, 1—apoplexy, 1—disease of the bowels, 2—inflammation of the bowels, 1—disease of the brain, 1—consumption, 14—convulsions, 1—croup, 5—cancer, 1—dysentery, 5—dropsy, 1—dropsy of brain, 1—delirium tremens, 1—erysipelas, 4—typhus fever, 2—typhoid fever, 2—scarlet fever, 3—lung fever, 2—puerperal fever, 2—gangrene, 1—hooping cough, 3—infantile diseases, 6—inflammation of the lungs, 5—disease of the liver, 1—marasmus, 1—old age, 1—pleurisy, 1—disease of the spine, 1—scrofula, 2—scalded, 1—strangulation, 1—teething, 3—tumor, 1—neuralgia, 1—unknown, 1.

Under 5 years, 27—between 5 and 20 years, 7—between 20 and 40 years, 19—between 40 and 60 years, 22—over 60 years, 5. Americans, 34; foreigners and children of foreigners, 46.

A Hydrocele containing Forty Ounces. By PAUL F. EVE, M.D., Professor of Surgery in the Medical College of Georgia.—On the 23d of this month (November), I operated before the present Class of our College on a case of Hydrocele, which, from its size, may be deserving notice.

Aaron, the patient, is a negro man aged 70, who some fifteen years ago first noticed an increase of the left scrotum, and which has continued to enlarge to the present time. He has also some accumulation of fluid in the right tunica vaginalis, with a reducible inguinal hernia on the same side, which however does not descend into the scrotum. Through the kindness of a professional friend in a neighboring county, he was directed to my Surgical Infirmary.

The scrotum was tapped by the trocar, and Dr. Means measured *forty ounces* drawn off through the canula. Diluted tincture of iodine was then injected, and the patient since has been doing well, with a good prospect of cure.

On a former occasion, I drew off thirty-seven ounces of fluid in a case of hydrocele, and permanently relieved the patient, by the same therapeutic agent.—*Southern Med. and Surg. Journal.*

Postage on Exchange Journals.—It is a remarkable fact, and one by no means creditable to our national legislators, that full postage is charged on the exchanges of medical and other scientific periodicals. It is the more remarkable, because such works are exclusively devoted to the improvement of those branches of knowledge in which the whole human family is interested, and are seldom if ever published with a view to private interest. Among the number which exist in our country, there are few, if any, which yield an adequate compensation to those who conduct them, and quite a large proportion are published at a positive loss. Under such circumstances, we repeat that it is surprising that Congress should be indifferent to the benefits conferred upon the world by the medical and other sciences, and impose upon these periodicals an onerous tax, which in the aggregate can yield but a paltry revenue to the government. The newspaper press is subject to no such burthen, but is free from all postal charges. We claim that scientific periodicals are entitled to equal favor and protection, and we believe that if the subject was properly brought to the notice of Congress, the grievance would be redressed. We would therefore respectfully suggest that the Editor of every such work should address a memorial to Congress on this subject, and forward it to the Chairman of the Post-office Committee.—*Ib.*

Springs of Fresh Water at Sea.—On the southern coast of the island of Cuba, south-west of the Port of Batabano in the gulf of Xagua, a few miles from the coast, springs of fresh water gush from the bed of the ocean, probably under the influence of hydrostatic pressure, and rise through the midst of the salt water. They issue forth with such force that boats are cautious in approaching this locality, which has an ill repute on account of the high cross sea thus caused. Trading vessels sailing along the coast and not disposed to land, sometimes visit these springs to take in a supply of fresh water, which is thus obtained in the open sea. The greater the depth from which the water is taken, the fresher it is found to be. The "river cow," *Trichechus manati*, which does not remain habitually in salt water, is often killed here.—*Humboldt's "Aspects of Nature."*